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Title: *Sørkapp Land ecosystem response to climate warming and conservation of nature*

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Sørkapp Land is the southern Spitsbergen peninsula, investigated by the Jagiellonian University scientific expeditions since 1980 (by the author since 1982). The peninsula comprises a diversified ecosystem due to its geographical location and variety of bedrock and terrain relief. Its oceanic Arctic climate is highly differentiated by coastal sea-currents, altitudes and slope aspects. Its steep eastern coast (washed by a cold sea-current) persists much colder and more glaciated than the western one (influenced by a warm sea-current). In addition, there are belts of coastal plains being the best habitat for tundra in the west and south. The upland-mountainous (up to 1431 m) interior is heavily glaciated. The entire territory has undergone quick changes for several dozen years. The most important driver of them is the climate warming which has begun after the Little Ice Age and intensified since the 1980s. From the 1980s to 2000-2009, the mean annual temperature increased by 2°C (from -5.2°C to -3.15°C) and the mean annual precipitation increased from 390.5 mm to 451.3 mm, in the Polish Polar Station on Isbjørnhamna (10 km from Sørkapp Land). A completely new landscape and ecosystem are just appearing in the eastern coast abandoned by glaciers, at the first stages of plant succession and animal colonization (only 15 species of vascular plants and 6 species of nesting birds were found there, the area is devoid of animals feeding on terrestrial plants yet). Thriving terrestrial ecosystems of the western and southern Sørkapp Land have developed a lot owing to the warming and glacial recession, but also big – and not necessarily positive – changes in vegetation, bird life and food chain have occurred due to the reindeer return and regeneration there since the 1990s (after establishment South Spitsbergen National Park in 1973). A rapid increase in their population (from 0-3 animals in the 1980s to at least 170 in 2008) has destroyed some plant communities and many nesting places for birds. New fjords (appeared after 1936) are being formed at present in the north, and huge new bays (appeared after 1900) are being widened in the southwest and east, because of glacial recession. Moreover, Sørkapp Land may be transformed into an island due to quick recession of glaciers in the isthmus connecting it with the rest of Spitsbergen (which narrowed from 22,6 km in 1936 to 6,3 km in 2011). The region is progressively becoming much less glaciated and more overgrown with plants.